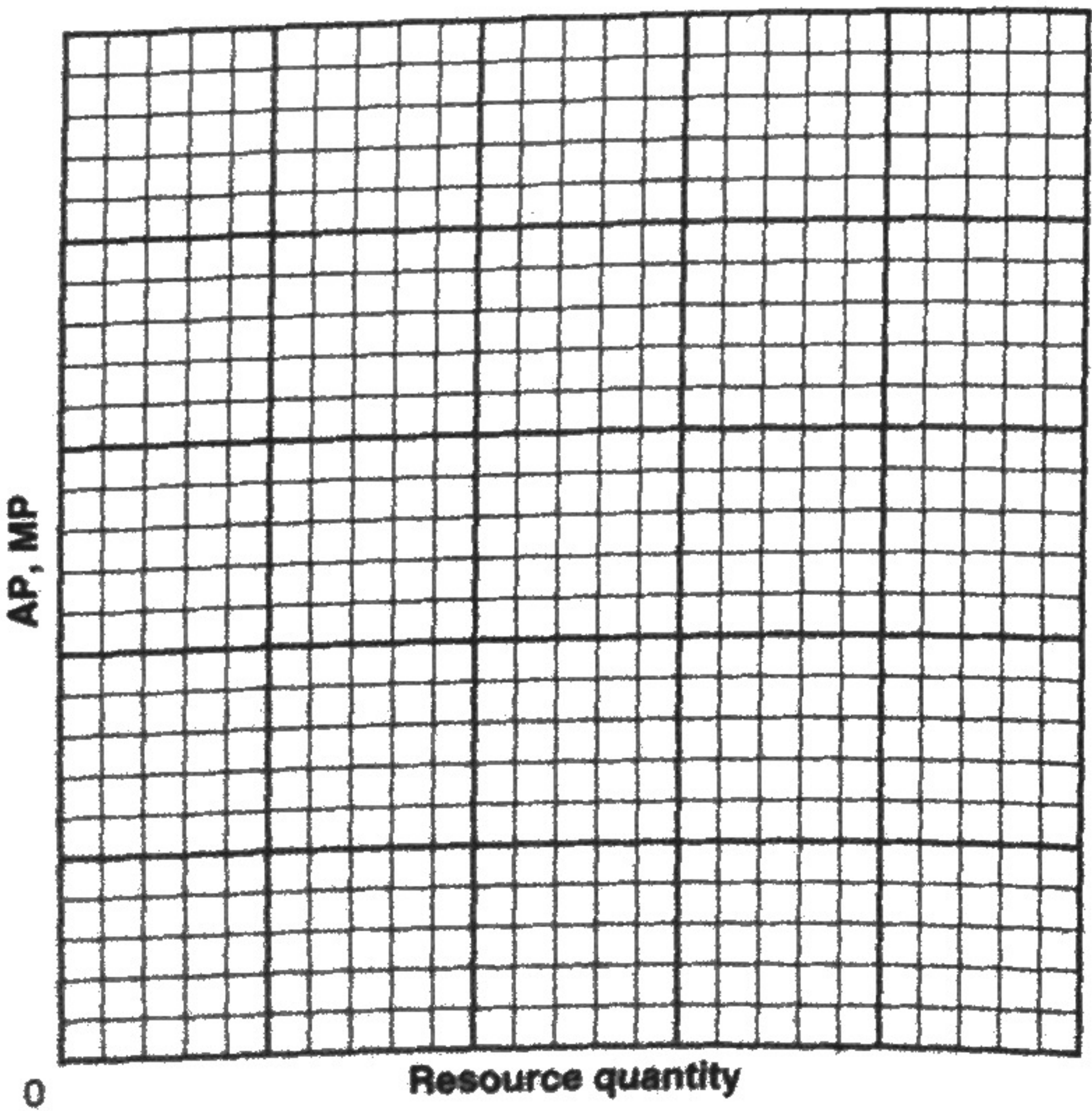


26. At what output is long-run average cost at a minimum?
- (a) 20
 - (b) 30
 - (c) 40
 - (d) 50
27. If the long-run average total cost curve for a firm is downsloping, then it indicates that there
- (a) is a minimum efficient scale
 - (b) are constant returns to scale
 - (c) are diseconomies of scale
 - (d) are economies of scale
28. Which factor contributes to economies of scale?
- (a) less efficient use of capital goods
 - (b) less division of labor and specialization
 - (c) greater specialization in management of a firm
 - (d) greater difficulty controlling the operations of a firm
29. A firm is encountering constant returns to scale when it increases all of its inputs by 20% and its output increases by
- (a) 10%
 - (b) 15%
 - (c) 20%
 - (d) 25%
30. If economies of scale are limited and diseconomies appear quickly in an industry, then minimum efficient scale occurs at a
- (a) high level of output, and there will be a few firms
 - (b) high level of output, and there will be many firms
 - (c) low level of output, and there will be few firms
 - (d) low level of output, and there will be many firms

■ PROBLEMS

1. On the following graph, sketch the way in which the average product and the marginal product of a resource change as the firm increases its employment of that resource.



2. The table shows the total production of a firm as the quantity of labor employed increases. The quantities of all other resources employed remain constant.

a. Compute the marginal products of the first through the eighth units of labor and enter them in the table.

Units of labor	Total production	Marginal product of labor	Average product of labor
0	0		0
1	80		
2	200		
3	330		
4	400		
5	450		
6	480		
7	490		
8	480		

- b. Now compute the average products of the various quantities of labor and enter them in the table.
- c. There are increasing returns to labor from the first through the _____ units of labor and decreasing returns from the _____ through the eighth units.
- d. When total production is increasing, marginal product is (positive, negative) _____ and when total production is decreasing, marginal product is _____.
- e. When marginal product is greater than average product, then average product will (rise, fall) _____, and when marginal product is less than average product, the average product will _____.

3. On the graph below sketch the manner in which fixed cost, variable cost, and total cost change as the output the firm produces in the short run changes.

